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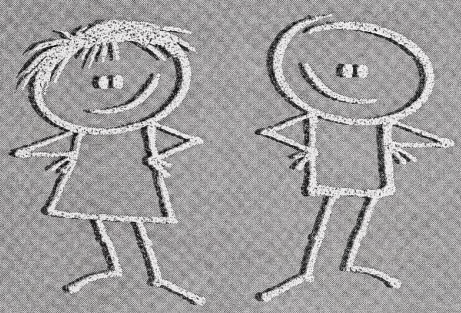
Mathematics 4

Module 1
Data Management



Assignment Booklet 1A

Learning Technologies Branch

Alberta LEARNING

FOR TEACHER'S USE ONLY

Summary

	Total Possible Marks	Your Mark
Day 1	17	
Day 2	13	
Day 3	14	
Day 4	19	
Day 5	11	
Day 6	16	
Day 7	25	
Day 8	27	
Day 9	(1) 10	
	(2) 15	
	(3) 10	
	177	

Teacher's Comments

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Home Instructors	✓
General Public	
Other	

Mathematics 4
Module 1: Data Management
Assignment Booklet 1A
Learning Technologies Branch
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ASSIGNMENT BOOKLET 1A
MATHEMATICS 4 – MODULE 1: DATA MANAGEMENT

Notes to the Home Instructor

Learning Tasks

The nine mathematics modules and the accompanying Assignment Booklets have been developed so that students become involved in a variety of learning tasks that help them develop mathematical skills, learn how to communicate mathematically, and become mathematical problem solvers.

When completing the assignments, students should work carefully and neatly. Students should do the activities in the Assignment Booklets **independently**. This will ensure that the teacher acquires a more accurate picture of the student's ability and understanding.

If the student is having difficulties, he or she should review the appropriate sections in the Student Module Booklet. The home instructor can assist the student by reviewing these sections with the student and encouraging him or her to explain, describe, or demonstrate (using manipulatives, drawings, and so on) his or her understanding of a particular concept or idea.

Assessment and Evaluation

A broad range of assessment tools will be used to gather information for the purpose of evaluating the student's knowledge and understanding of curriculum skills and concepts. It is important that the teacher learns how the student thinks about mathematics as well as what concepts and skills the student has mastered. Assignment Booklet questions, journal entries, performance assessments, observations by the home instructor, and student self-evaluation pages may all be used. As well, the teacher may also use a final test.

In order to give the student and home instructor feedback on the student's current level of achievement throughout the school year, the student's teacher may provide written comments and assign a grade at the end of each module. The mark for each module will be determined primarily by how well the student completes the assignments in the Assignment Booklets. However, other broad-based assessment techniques (journal entries, performance assessments, and so on) may also be used.

17

Day 1: What Is Data Management?

1. Journal Entry

5

Explain in your own words what **data management** is.

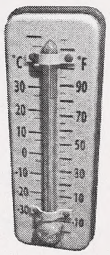
(5) **2.** Name **five** things that gave you some data today.

(3) **3.** Explain why it is important for data to be organized.

(4) **4.** Lucie wrote down the daily high and low temperatures for the week of August 14 to 20.

High and Low Temperatures for August 14–20

22°	11°	24°
9°	10°	24°
19°	18°	13°
22°	14°	27°
15°	23°	



Do you think the information presented in Lucie's chart is clear and easy to understand? Tell why or why not.

13

Day 2: Why Data Is Collected

5

1. Think of any **five** questions you could ask that need data in order to be answered. Use the question starters that are provided.

- Who _____
- What _____
- Where _____
- When _____
- How _____

6

2. Mrs. Melody is a music teacher. She has moved to a new town and would like to open up a music school. Mrs. Melody would like a lot of students to come to her school for music lessons.

List **three** kinds of data she needs to know in order to make her school successful.

- _____
- _____
- _____

(2) **3.** Why is a bar graph a good way to share information with other people?

_____

_____

_____

_____

_____

(14)

Day 3: Conducting a Survey

1. Suppose you want to open a store that sells pets and pet supplies. You want to make sure your store attracts many customers, so you decide to do a survey to collect data about the kinds of pets and supplies that are popular.

(5) **a.** Write **five** different questions that you could ask in order to gather data about pets and pet supplies.

- _____
- _____
- _____
- _____
- _____

(1) **b.** Which question would you choose if you wanted to use only **one** question on your survey? Write it here.

_____

_____

(2) **c.** Tell why you chose this question.

_____

_____

_____

_____

(4) **2. a.** Explain how you would conduct the survey. How many people would you ask? How would you decide who to ask?

(2) **b.** If you want the group of people you survey to be a **random sample**, what could you do?

(19)

Day 4: Collecting and Recording Data

(3)

1. Write the number for each tally.

   a. 𝍸 𝍸 ||| _____

   b. 𝍸 𝍸 𝍸 𝍸 𝍸 |||| _____

   c. 𝍸 𝍸 𝍸 || _____

(3)

2. Use tally marks to show each number.

   a. 7 _____

   b. 14 _____

   c. 26 _____

(3)

3. Survey ten or more people that you know. Ask them for their shoe size. Show how you would record the data using either a tally sheet or a response sheet. Use the space below.

4. Taima and Stephen decided to conduct a survey to see whether the students in their elementary school preferred watching hockey or figure skating on TV.

Stephen surveyed 50 boys from Grades 4 and 5. From his results, he concluded that most students in the school prefer watching hockey.

Taima surveyed 50 students on the playground. From her results, she concluded that about half of the students prefer hockey and about half prefer figure skating.

(3) **a.** Who had the better method for collecting data? Explain why you think so.

(2) **b.** Describe another method you could use to choose a sample of students to be surveyed. (Remember that the data you collect should give accurate information about the population being surveyed.)

5.

Journal Entry

Describe some things you have discovered about **collecting data**.

(5)

11

5

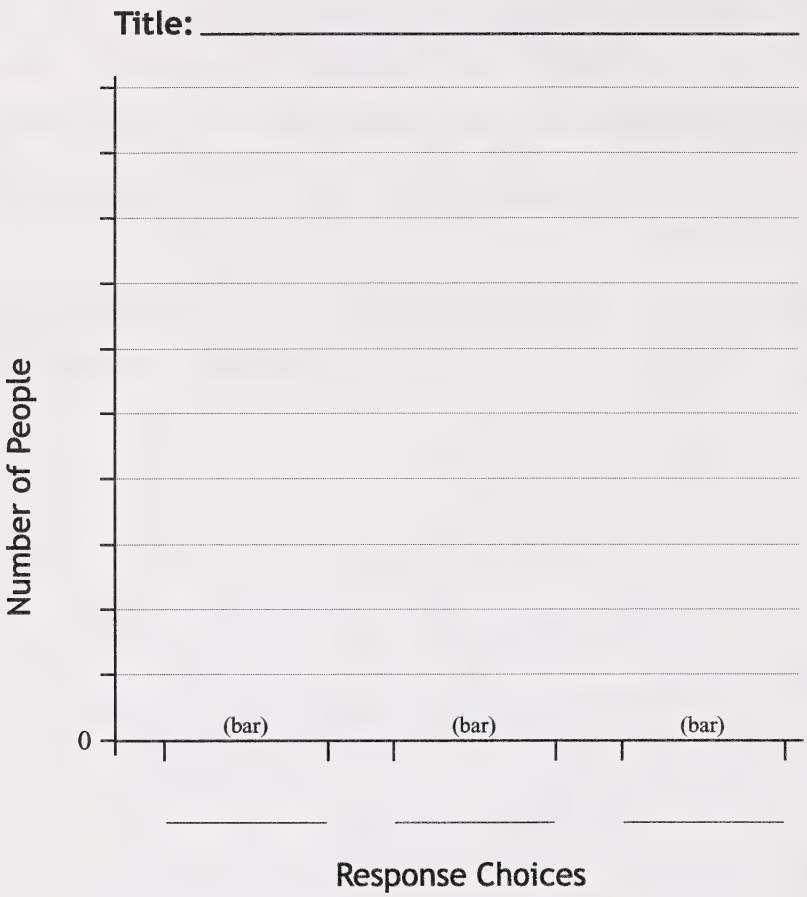
Day 5: Displaying Data

1. Go back to the survey results of your "Would you rather…?" question from Day 4 in your Student Module Booklet. Use a bar graph to organize and graph the information you collected. Use the graph form on the next page.

If you were unable to complete the survey in Day 4, use the values provided in the answers in the Appendix to complete this assignment question.

Do the following to complete the bar graph:

- Number up the left axis from 0 to 10.
- Write each response choice on a line at the bottom.
- Draw and colour a bar above each response to show the number of times you got this response.
- Give a title to the graph.


Title: _____
Number of People
0
(bar)
(bar)
(bar)
Response Choices

2. Look closely at the results shown on your bar graph.

(2) **a.** Which response was chosen more often?

_____

_____

(2) **b.** Which response was chosen least often?

_____

_____

(2) **c.** How many people in all were surveyed?

_____

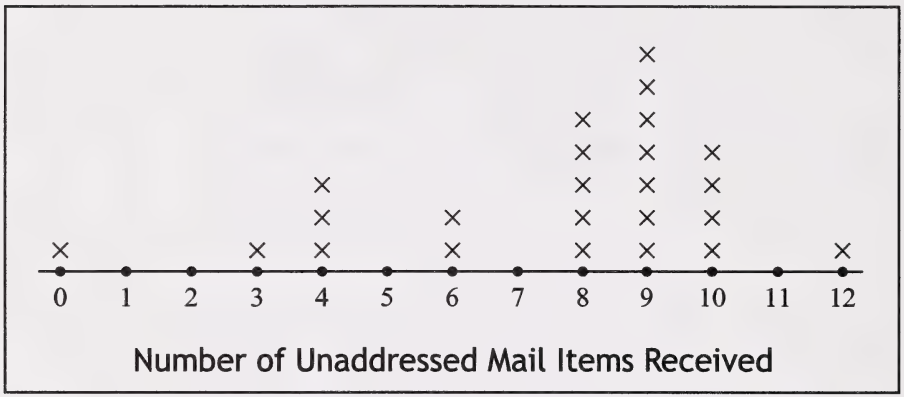
_____

16

3

Day 6: Interpreting Line Plots

1. Every day the families who live in the Sunflower Apartments receive many unaddressed items like flyers, catalogues, announcements, and other kinds of advertisements in the mail. Sandra and Trina decided to survey each apartment to see how many pieces of unaddressed mail each family received one Wednesday. They displayed their data on a line plot.



a. How many families received four unaddressed mail items? _____

b. How many families received more than seven unaddressed items?

_____

c. How many families were surveyed? _____

d. What was the greatest number of unaddressed mail items received by a family? _____

e. Why did the girls include the number 0 on their line plot?

_____

_____

f. What statement could you make about the number of unaddressed mail items received by most families? (Begin your sentence with "Most families received...")

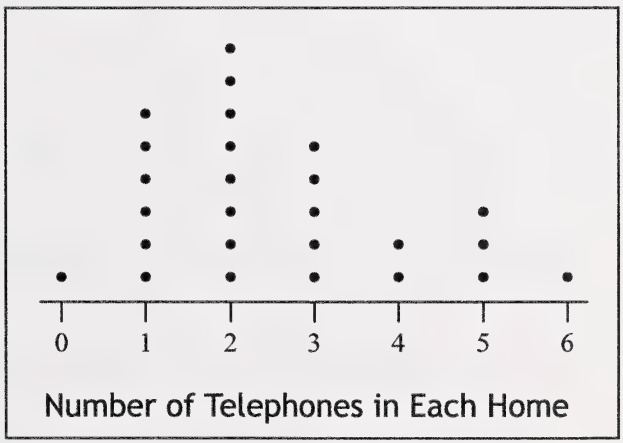
_____

_____

_____

_____

2. The following line plot gives information about the number of telephones found in the homes of Grade 4 students. Look carefully at the graph. Then answer the questions that follow.



(1/2) **a.** How many students have two telephones? _____

(1/2) **b.** How many phones are in the home with the most telephones? _____

(1/2) **c.** How many students were surveyed? _____

(1/2) **d.** What does the dot above 0 tell you?

_____

_____

(1/2)

e. Write a statement about the number of telephones found in most Grade 4 homes. (Begin with "Most Grade 4 homes…")

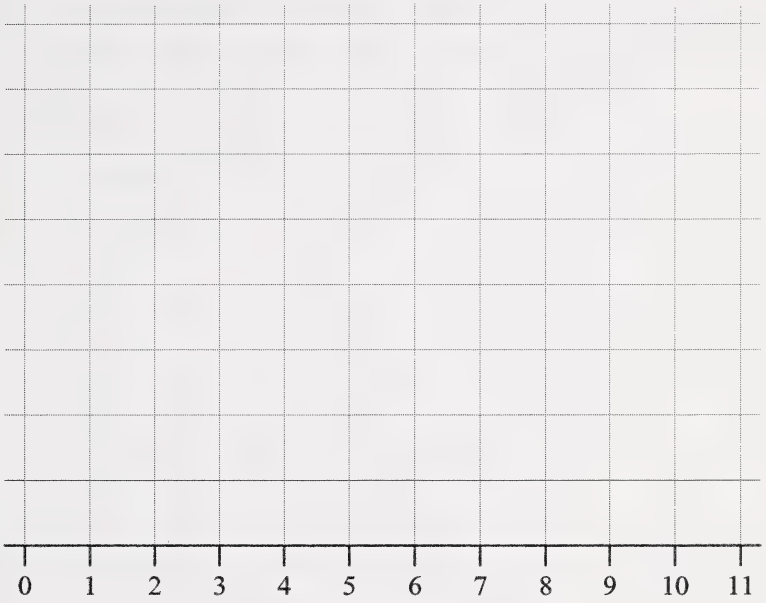
_____

_____

3. Trevor surveyed his Grade 4 classmates to see how many books they read over the summer. Instead of using a tally sheet, he used a response sheet. This is what he recorded.

Number of Books Read by Grade 4s				
5	3	10	5	4
4	7	5	3	6
7	5	4	10	3
4	8	0	5	5
11	1	4	3	6

(4) **a.** Construct a line plot of the data that Trevor recorded. Write a title for the line plot in the space below the line plot.



Title: _____

(1/2) **b.** The most books read by one student was _____.

(1/2) **c.** What statement could you write about the number of books read by most Grade 4 students over the summer?

_____

_____

(1/2) **d.** How many students didn't read any books? _____

4.

Journal Entry

Explain in your own words some things you have learned about **line plots**.

(5)

25

Day 7: Interpreting Bar Graphs and Pictographs

1. Turn to pages 10 and 11 in your textbook. Look at the three graphs that give data about a class of 30 students. For each graph, write three true statements about the class based on the data presented.

3

a. "Our Favourite Ice Cream Flavours" graph

- _____
  _____
- _____
  _____
- _____
  _____

3

b. "How We Get to School" graph

- _____
  _____
- _____
  _____
- _____
  _____

(3) **c.** "Number of People in Our Families" graph

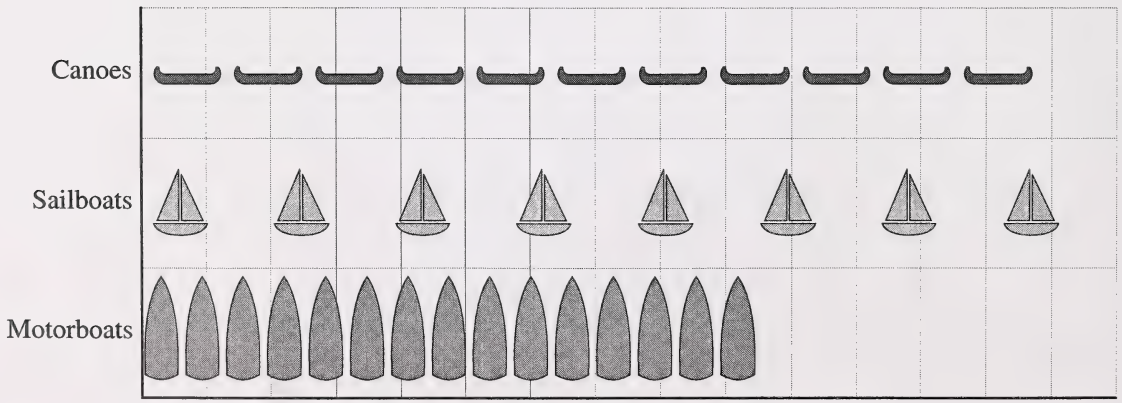
- _____
  _____
- _____
  _____
- _____
  _____

2. Dana and Danielle helped their father with boat rentals at the lake during the August long weekend. They kept track on a tally sheet of the three kinds of boats that were rented.

Type of Boat	Tally	Frequency
Canoes	𝍸 𝍸 |	11
Sailboats	𝍸 |||	8
Motorboats	𝍸 𝍸 𝍸	15

Using this data, the two girls constructed a pictograph.

Boat Rentals on the August Long Weekend

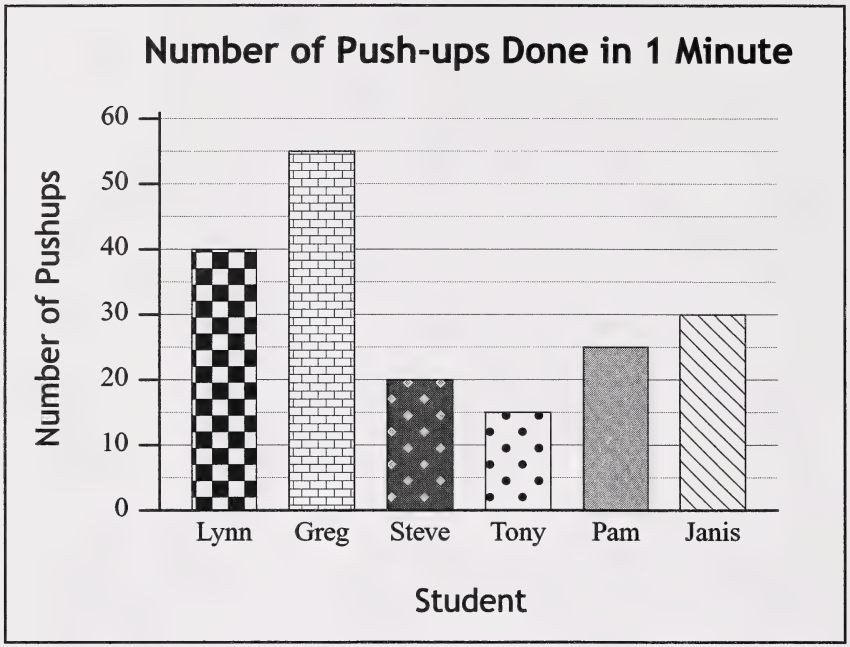


(2) **a.** Something is wrong with this pictograph. What needs to be done so that it displays the data correctly?

(3) **b.** Redraw the pictograph correctly. Use the graph form that follows.

Boat Rentals on the August Long Weekend

(4) **3.** Use the data presented in the bar graph to answer the questions that follow.



a. Which student was able to do the most push-ups in 1 minute?

_____

b. How many more push-ups would Lynn have to do in order to tie for first place? _____

c. How many push-ups did Tony, Pam, and Janis do altogether?

_____

d. What is the difference between the greatest number of push-ups and the least number of push-ups? _____

4. Use the information in the pictograph to answer the following questions.

Bicycle Sales for Five Months	
May	
June	
July	
August	
September	
stands for **10** bicycles.	

(1) **a.** How many bicycles were sold in August? _____

(2) **b.** Most of the bicycles were sold in which two months?

_____ and _____

(1) **c.** How many more bicycles were sold in June than in September?

_____

(1) **d.** How many bicycles were sold altogether in five months? _____

(2) **e.** Do you think more or fewer bicycles will be sold in October than were sold in September? Explain your answer.

_____

_____

_____

27

Day 8: Problem Solving

The Problem-Solving Process

(3)

1. a. You have agreed to meet your friends at the playground. As you are tying your laces in your sneakers, the lace breaks. List three ways you could solve this problem.

- _____

_____

- _____

_____

- _____

_____

(3)

b. Which solution do you think is the best one? Tell why.

_____

_____

_____

_____

_____

Note: Try these problems using the Acting Out the Problem strategy. Remember that for some problems you may need to make some manipulatives to use as you act out the steps of the problem.

(5)

2. Andrew rearranged his collection of flags in the display case in his room. The case has 4 shelves with 2 spaces on each shelf. He has flags from the following countries:

- Denmark
- Brazil
- India
- Australia
- Greece
- Japan
- Canada
- Egypt

He arranged the flags in the following way:

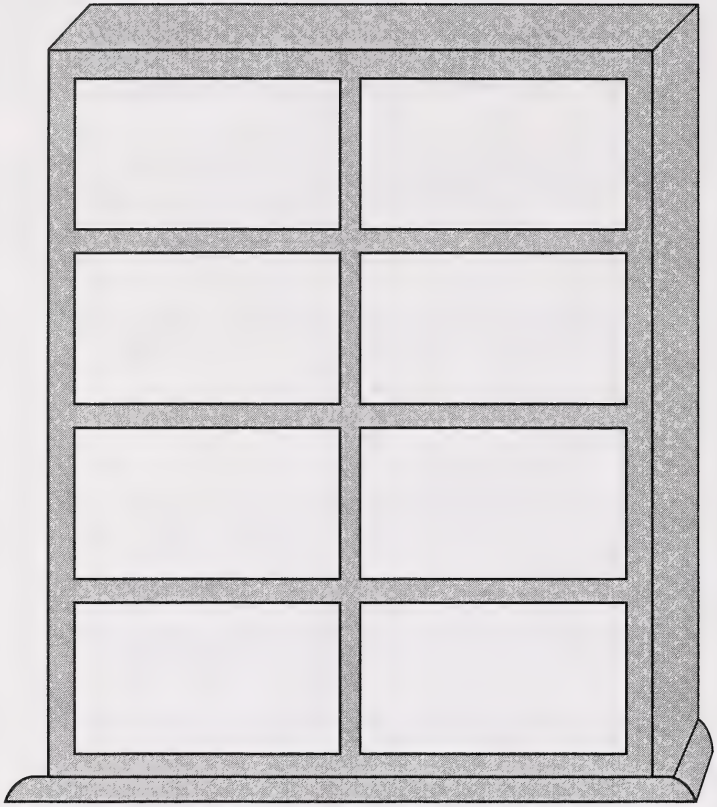
- He put Australia below Japan and across from Egypt.
- He put Canada on the bottom shelf below Australia.
- He did not put India next to Japan or Canada.
- He put Brazil on the top shelf.
- He did not put Denmark next to Japan.

Where did Andrew put each flag?

Turn to the back of this Assignment Booklet and remove the cut-out learning aids for Day 8 Assignment Activities. Cut out the flags that appear at the top of the page.

Place the flags on the correct shelves on the next page. When you have solved the problem, glue each flag in its correct place.

Shelves



3. Heather bought a second-hand bike for $25. She sold it for $30, and then bought it back for $35. Finally, she sold it again for $40. How much money did Heather make or lose? Show or explain how you got your answer.

Hint: Find or make some play money. (You need ten $5-bills.) Then act out the buying and selling with your home instructor to see if you end up with more or less money than you started with.

For questions 5 and 6, use the cut-out learning aids from the cutouts page. Use the information in each problem to help you put the cutouts in the correct order. Glue the cutouts in place below each question. Then write your answer in a complete sentence.

(3) **4.** Four cows were heading to the barn for milking time. A black cow was first. A brown cow was in front of a black-and-white cow. A one-horned cow was in front of the brown cow. Which cow was second?

(3) **5.** Six students were standing in line for the water fountain: Fran, Bill, Lisa, Greg, Tim, and Sue. Fran was ahead of Sue and Greg. Sue was two places behind Greg. Bill was three places ahead of Tim. Lisa was two places ahead of Fran. Who was fourth in line?

For question 7, use the cut-out learning aids from the cutouts page. Use the information in the problem to help you put the cutouts in the correct order. Glue the cutouts in place on the table drawing.

(5)

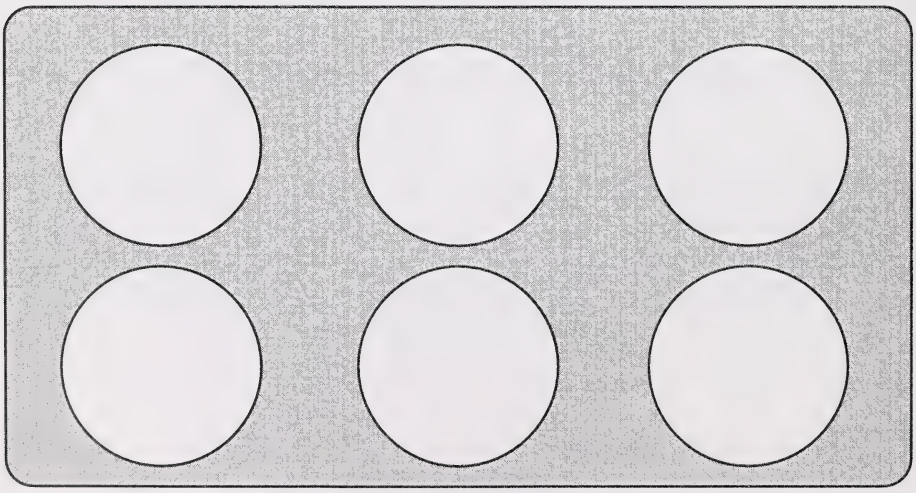
6. The Jackson family went out to their favourite restaurant for a buffet supper. The dessert table had six choices for dessert:

- chocolate cake
- ice cream
- brownies
- lemon pie
- strawberries
- cherry pie

There were three choices on each side of the table.

- The chocolate cake was across from the strawberries and next to the cherry pie.
- The lemon pie was at the opposite end of the row from the strawberries.
- The ice cream was not next to the stawberries.

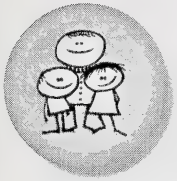
Show how the dessert table was set up. Then write a sentence that tells which three desserts were on each side of the table.



_____

_____

Day 9: Assessing What You Know (I)



Home Instructor's Assessment Page for Day 7

Student's Name _____

Home Instructor _____ Date _____

Directions for the Home Instructor

Remove this sheet from the Assignment Booklet. Use the Checklist and Comments sections to help evaluate the student's work. When the Day 9 activities have been completed, firmly attach this sheet to Assignment Booklet 1A.

Indicate in the Checklist and Comments sections what you observe and hear as the student works through the assessment task. Encourage the student to "think out loud" as he or she works. As you observe, you may wish to use questions or prompts like the following to help in determining the student's level of understanding.

- What do you have to do first to make a line plot?
- What else do you need to include in a line plot?
- What do the numbers along the bottom axis stand for?
- How do you know how many large dots (or Xs) to put above each number?
- How do you know when you've finished making the line plot?
- What information does this line plot tell you?
- What else can you tell me about the data?

Checklist

A. The student shows a clear understanding of how to make a line plot.	☐ Yes	☐ Not yet
B. The student can explain the need for (or purpose of) the numbers along the bottom axis.	☐ Yes	☐ Not yet
C. The student can accurately read and interpret the data he or she has displayed on the line plot.	☐ Yes	☐ Not yet
D. The student can draw some conclusions based on the line plot (that is, can state what must be true).	☐ Yes	☐ Not yet

Comments

Add any comments you have regarding the student's performance on the assessment task or any other information about the student's learning experiences in this module that you would like to share with the teacher.

Day 9: Assessing What You Know (I)

Student's Assessment Page for Day 7

Student's Name _____

(10)

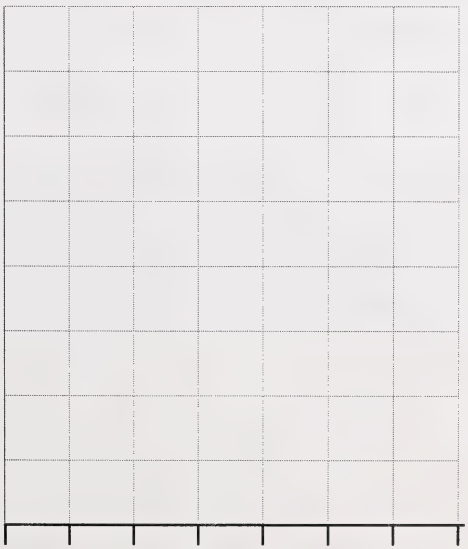
Part 1: Showing What You Can Do

Constructing a Line Plot

Mr. Penner surveyed his Grade 4 class to see how many children were in each family. He recorded the results on a response sheet.

Melissa 2	Rajid 4	Tracy 1
Peter 5	Cyril 3	Pina 2
Calvin 1	Selena 6	Gary 3
Linda 3	Valerie 4	Rocky 1
Barry 2	Trina 2	Liz 3
Raymo 4	Debbie 2	Gaston 2
Alook 3	Carlotta 5	Justin 2

(4) **1.** Use the following grid to make a line plot of this data.



2. Using the line plot you made, tell your home instructor **three** things you now know about the families of the students in Mr. Penner's class. Then, write a sentence about each of these three things.

(6)

- _____
  _____
- _____
  _____
- _____
  _____

(15)

Part 2: Project Time

For this activity you will construct a bar graph that displays data about your family. First, think of something about your family that you would like to investigate and share with others. You may have an idea of your own, or you might want to investigate a topic from this list:

- your family's favourite…
  - foods
  - television shows
  - places to visit
  - restaurants
  - kinds of music
  - sports

Try to find 10 to 12 people to survey. Since your immediate family (Mom, Dad, brothers, sisters) is probably smaller than this, you may need to survey members of your extended family (grandparents, cousins, aunts, uncles) as well.

(1) **1. a.** What question will you ask in your survey? (**Hint:** You may want to use a "Would you rather…?" question in order to limit the number of responses to three or four.) Write your question here.

_____

_____

_____

Next ask yourself these questions:

- Does my question ask what I want it to ask?
- Will it give me the information that I am looking for?

If you think the survey question you wrote for question 1 needs to be rewritten or changed, go back and change it now. If you think that your question will give you information you are looking for, move on to question 1.b.

(1) **b.** Next, decide how you will collect and record your data. Choose one of these methods:

- Get each member of your family to fill out a questionnaire.
- Ask each family member the question orally. Record answers by writing down what each person says.
- Use a tally sheet.

Write the method you will use.

_____

(3) **2.** Record your data on the **Data Recording Page** that follows.

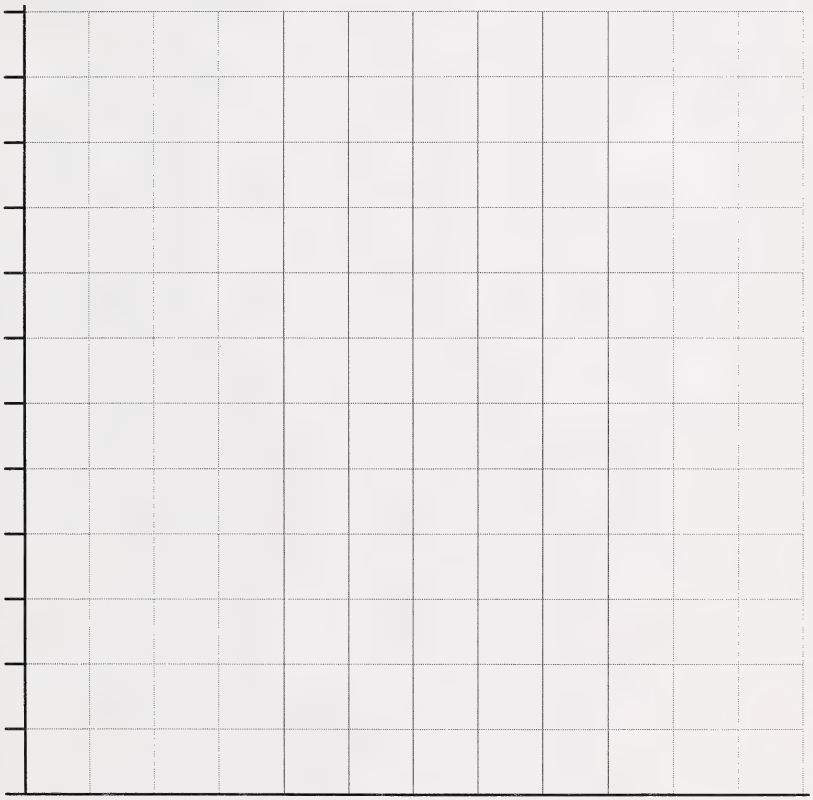
Data Recording Page

Use this page to record your data for question 3. Make a tally sheet form with three columns **or** make a response sheet on which you record each person's response.

(5) **3.** Once you have collected the data, draw a bar graph on the **graph form** that follows. Look back at Day 5 if you forget how to draw a bar graph. Be sure to label the axes, include a title, and colour the graph.

Graph Form

Title: _____



(5) **4.** After you have completed your bar graph, tell what you found out about your family. Write **five** statements that are true based on the data presented in your graph.

- _____
  _____
- _____
  _____
- _____
  _____
- _____
  _____
- _____
  _____

(10)

Part 3: Basic Number Facts

This section is made up of two timed tests. Ask your home instructor to time you as you do each test. Wait for your home instructor to tell you when to begin. **Do not mark these tests. They will be marked by your teacher.**

1. Addition Number Facts
Timed Test: 2 minutes

(5)

9 + 8	7 + 5	6 + 6	7 + 9	9 + 5
5+8=	8+7=	9+2=	6+8=	8+4=
7 + 6	5 + 9	7 + 8	8 + 5	7 + 7
6+9=	8+8=	6+7=	8+6=	9+7=
5 + 7	9 + 9	4 + 9	6 + 5	8 + 9

If you finish before the two minutes are up, check your answers. Wait for your home instructor to tell you when to begin the next test.

(5) **2.** Subtraction Number Facts
Timed Test: 2 minutes

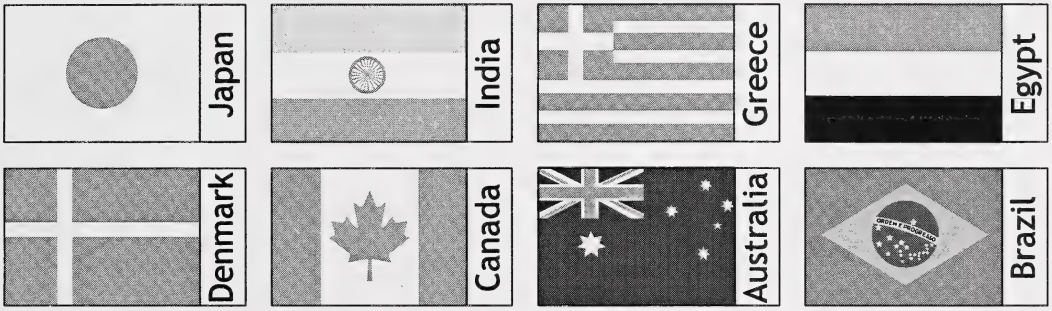
15 − 9	13 − 4	18 − 9	14 − 5	13 − 9
15 − 7 =	16 − 9 =	17 − 8 =	13 − 5 =	16 − 8 =
13 − 8	17 − 9	14 − 6	15 − 8	14 − 7
12 − 5 =	13 − 7 =	11 − 6 =	14 − 8 =	16 − 7 =
15 − 6	14 − 9	12 − 9	13 − 6	12 − 4

If you finish before the two minutes are up, check your answers.

Cut-Out Learning Aids

Day 8 Assignment Activities

Question 2



Question 4

Black Cow	Brown Cow	Black-and-White Cow	One-Horned Cow

Question 5

Fran	Bill	Lisa	Greg	Tim	Sue

Question 6

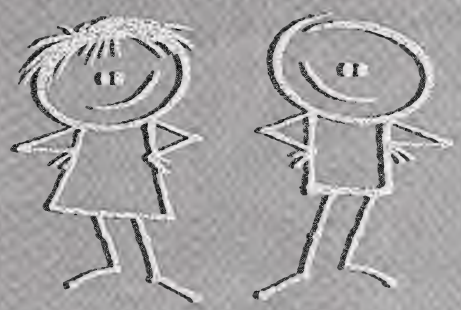
Brownies | Cherry Pie | Lemon Pie | Ice Cream | Chocolate Cake | Straw-berries

Mathematics 4
Assignment Booklet 1A
Module 1

2000

Mathematics 4

Module 1
Data Management



Assignment Booklet 1B

Learning Technologies Branch

Alberta LEARNING

FOR TEACHER'S USE ONLY

Summary

	Total Possible Marks	Your Mark
Day 10	24	
Day 11	20	
Day 12	14	
Day 13	26	
Day 14	22	
Day 15	23	
Day 16	(1) 37	
	(2) 10	
Day 17	(1) 10	
	(2) 10	
	196	

Teacher's Comments

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Home Instructors	✓
General Public	
Other	

Mathematics 4
Module 1: Data Management
Assignment Booklet 1B
Learning Technologies Branch
ISBN 0-7741-1600-5

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ASSIGNMENT BOOKLET 1B
MATHEMATICS 4 - MODULE 1: DATA MANAGEMENT

Notes to the Home Instructor

Learning Tasks

The nine mathematics modules and the accompanying Assignment Booklets have been developed so that students become involved in a variety of learning tasks that help them develop mathematical skills, learn how to communicate mathematically, and become mathematical problem solvers.

When completing the assignments, students should work carefully and neatly. Students should do the activities in the Assignment Booklets **independently**. This will ensure that the teacher acquires a more accurate picture of the student's ability and understanding.

If the student is having difficulties, he or she should review the appropriate sections in the Student Module Booklet. The home instructor can assist the student by reviewing these sections with the student and encouraging him or her to explain, describe, or demonstrate (using manipulatives, drawings, and so on) his or her understanding of a particular concept or idea.

Assessment and Evaluation

A broad range of assessment tools will be used to gather information for the purpose of evaluating the student's knowledge and understanding of curriculum skills and concepts. It is important that the teacher learns how the student thinks about mathematics as well as what concepts and skills the student has mastered. Assignment Booklet questions, journal entries, performance assessments, observations by the home instructor, and student self-evaluation pages may all be used. As well, the teacher may also use a final test.

In order to give the student and home instructor feedback on the student's current level of achievement throughout the school year, the student's teacher may provide written comments and assign a grade at the end of each module. The mark for each module will be determined primarily by how well the student completes the assignments in the Assignment Booklets. However, other broad-based assessment techniques (journal entries, performance assessments, and so on) may also be used.

(24)

Day 10: Constructing Pictographs

1. Con surveyed his class to find out how each student usually gets to school each day. He recorded the answers on a class list.

Class List — Grade 4C

Robert A.	bus	Trent O.	walk
David A.	walk	Melissa P.	bus
Michael B.	bus	Jennifer P.	walk
Anders C.	bike	Gerry R.	bike
Tao C.	bike	Elmo S.	car
Megan F.	car	Teresa S.	bus
Fatima G.	walk	Walter T.	walk
Leslie L.	bus	Roger T.	bike
Kieran M.	car	Serena W.	walk
April M.	walk	Joyce W.	walk
Bobby N.	bus	Rico Y.	bike

(4)

a. Use the data from the class list to complete the tally sheet.

Method of Travel	Tally	Total
Bike		
Bus		
Car		
Walk		

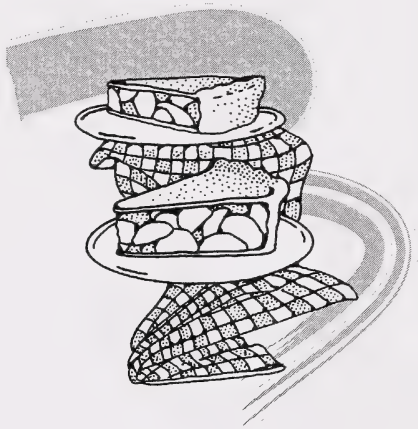
(5) **b.** Construct a pictograph using the information from the tally sheet. Think of a symbol to use on your graph that will stand for one person. Remember to tell the meaning of your symbol at the bottom of your graph and put a title at the top.

(3) **c.** Write **three** statements that are true based on the data shown in the pictograph.

- _____
- _____
- _____

2. Ricki and Warren surveyed several students from Grade 4 to find out the most popular kinds of pie. They recorded their findings on the following chart.

Favourite Kind of Pie	Number of Students
Apple	8
Cherry	16
Blueberry	10
Lemon	6
Banana Cream	12
Pumpkin	5



(5) **a.** Construct a pictograph using the data from the chart. Remember to add a title and colour the graph. If you use many-to-one correspondence, you need to show how many people each symbol stands for.

(2)

b. Ricki and Warren's class are planning a noon hour pie sale. What **four** kinds of pie should they sell?

- _____ • _____
- _____ • _____

(5)

3.

Journal Entry

Tell about some of the important things you need to remember when constructing a pictograph (for example, size of each symbol, spacing, and so on).

_____

_____

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(20)

Day 11: Constructing Bar Graphs (I)

1. Danny surveyed five of his friends about the number of brothers and sisters they have. He recorded the results on a response sheet.

How many brothers and sisters do you have?	
Jake	3
Eddie	6
Carol	4
Lori	5
Steve	4

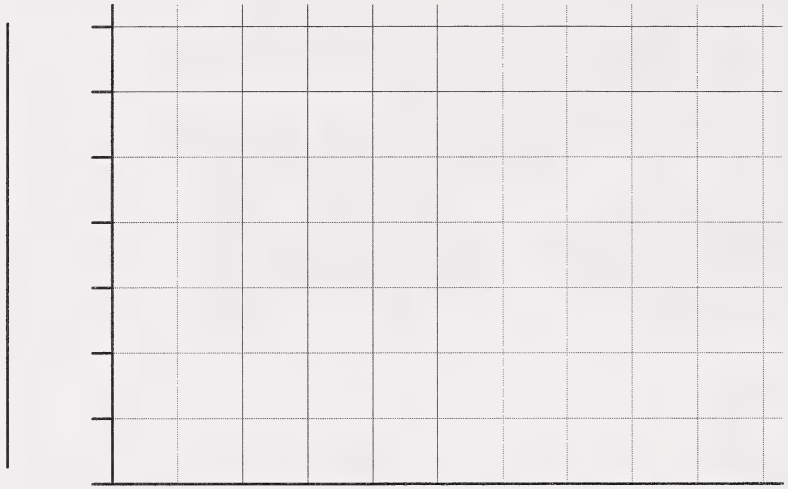
(5) **a.** Construct a bar graph using the information shown on the response sheet.

Remember to

- label the bars
- label each axis
- colour the graph
- put a title at the top

Use the graph form on the next page.

Title: _____



_____

(1) **b.** How many of Danny's friends have more than three brothers and sisters? _____

(1) **c.** Who has the most brothers and sisters? _____

(1) **d.** Who has the same number of brothers and sisters? _____

2. Mrs. Talma, the school principal, decided her school needed an after-school club. She surveyed a random sample of students in Grades 4 to 6 to see what type of club would interest most students.

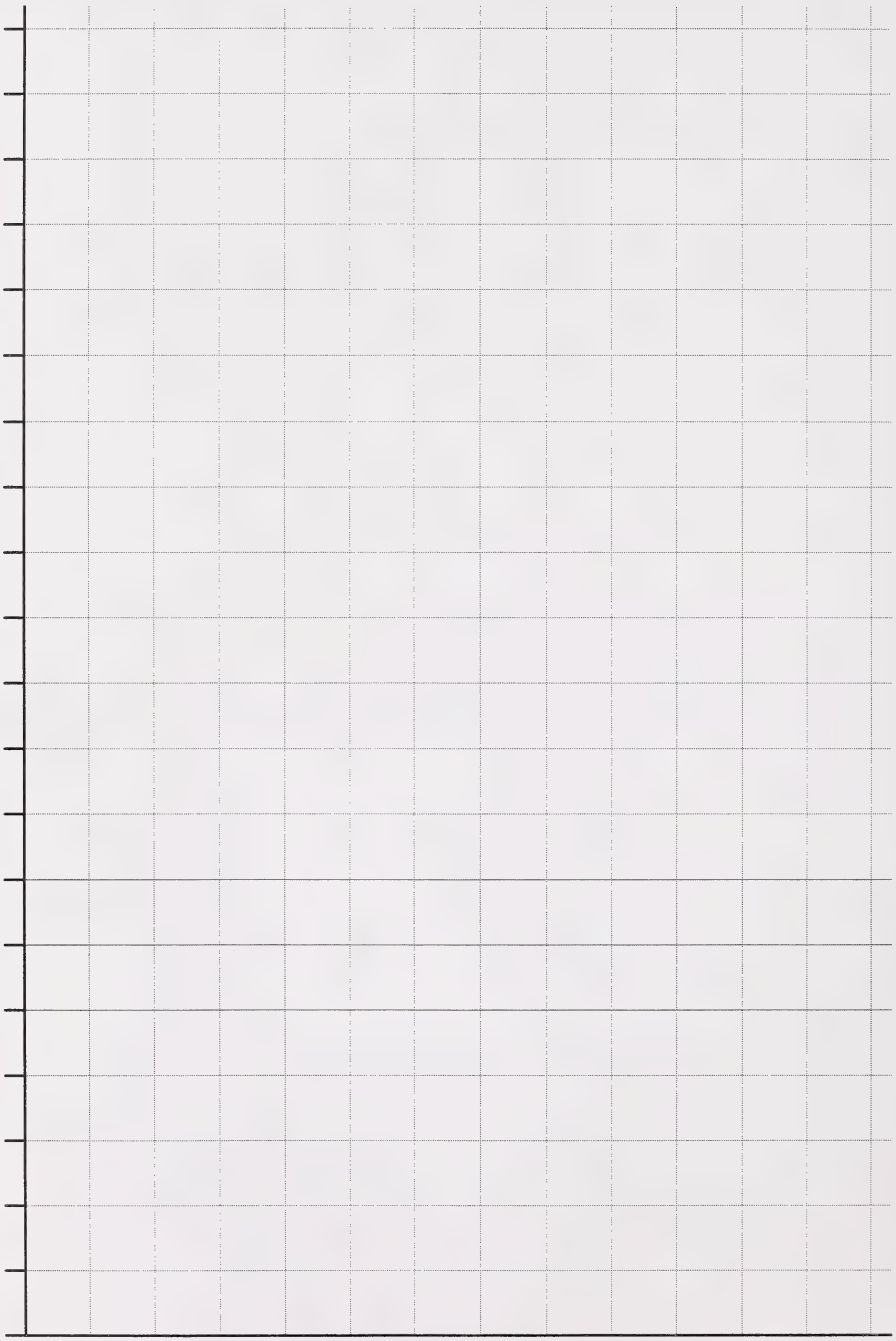
Type of Club	Tally	Total
Drama	𝍸 III	
Athletics	𝍸 𝍸 𝍸 IIII	
Computer	𝍸 𝍸 𝍸 II	
Music	𝍸 𝍸 I	
Arts and Crafts	𝍸 IIII	

(2) **a.** Complete the tally sheet by writing each total in the third column.

(5) **b.** Construct a bar graph using the information shown on the tally sheet. Remember to label the bars and each axis. Colour the graph and put a title at the top.

Use the graph form on the next page.

Title: _____



Use the bar graph and the tally sheet to answer the following questions.

(1) **c.** How many students in all were surveyed? _____

(1) **d.** Which type of club is most popular with the students?

_____

(1) **e.** How many more students preferred the athletics club to the computer club? _____

(2) **f.** If you were Mrs. Talma, would you start one club or two clubs? Explain your answer.

_____

_____

_____

_____

_____

(14)

Day 12: Constructing Bar Graphs (II)

1. For his Science Fair project, Tran kept track of the monthly precipitation (rain and snow) for the first six months of the year. To do this, he recorded the number of millimetres of precipitation each day. At the end of each month, he totalled the amount recorded for all the days and entered the total on a chart.

Month	Amount of Rain and Snow
January	25 mm
February	20 mm
March	15 mm
April	20 mm
May	45 mm
June	75 mm

(5)

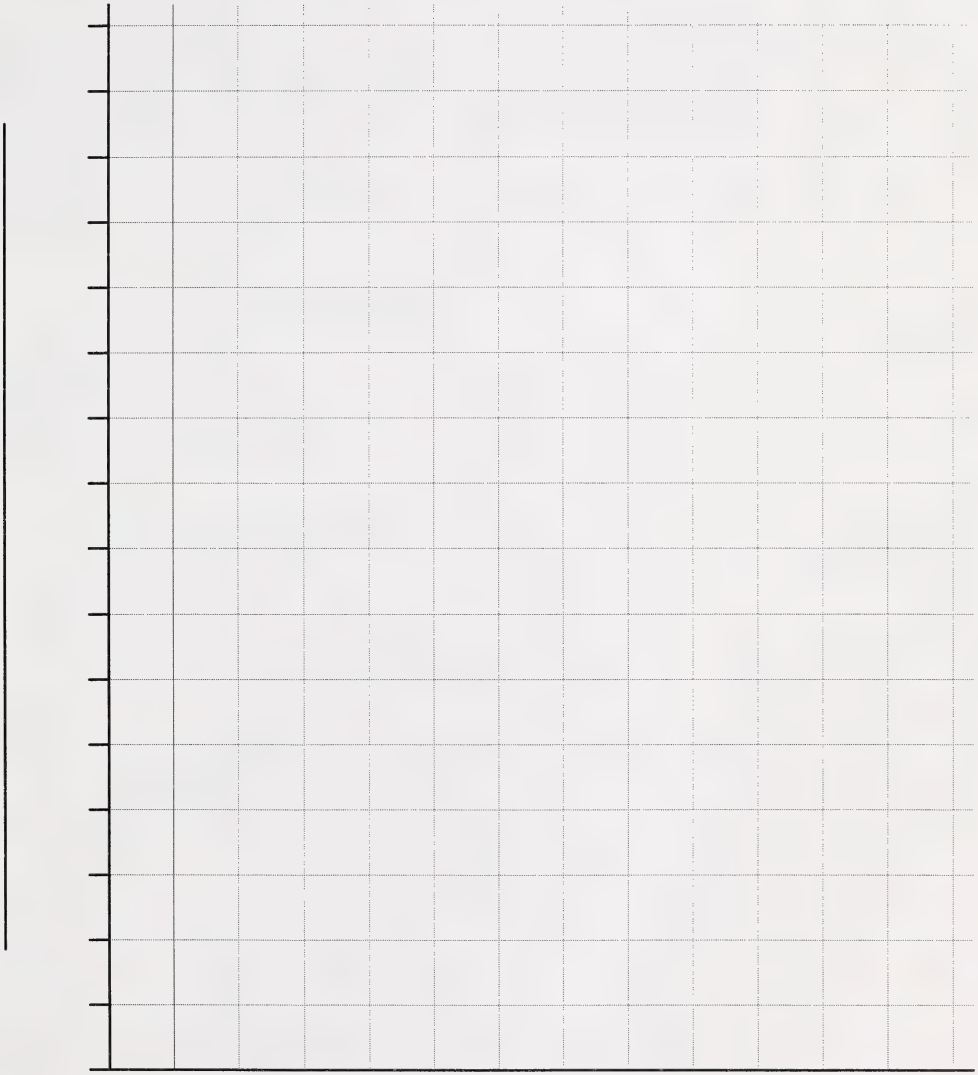
a. Construct a bar graph using the data from the chart.

- Label each axis.
- Label and colour the bars.
- Put a title at the top.

Use the graph form on the next page.

Remember, if you use many-to-one correspondence you must first decide on an interval to use along the vertical axis. If you forget how to do this, check back in Day 11 of the Student Module Booklet.

Title: _____



(2) **b.** Which months had more precipitation than January?

_____

(2) **c.** What was the total precipitation for January to June? (Use a calculator if you wish.)

_____

(5) **2.** ## Journal Entry

Tell about some of the important decisions you have to make when you are constucting a bar graph (for example size of bars, spacing, intervals, and so on).

_____

_____

_____

_____

_____

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26

Day 13: Observing Events

Turn to page 170 of your textbook and read Collecting and Graphing Data.

Today you will be doing three 1-minute activities like those on page 170.

Ask your home instructor to work with you. Each of you will do an activity while the other person acts as timekeeper.

Record the results from each activity so that you can make a bar graph with the data you collect.

2

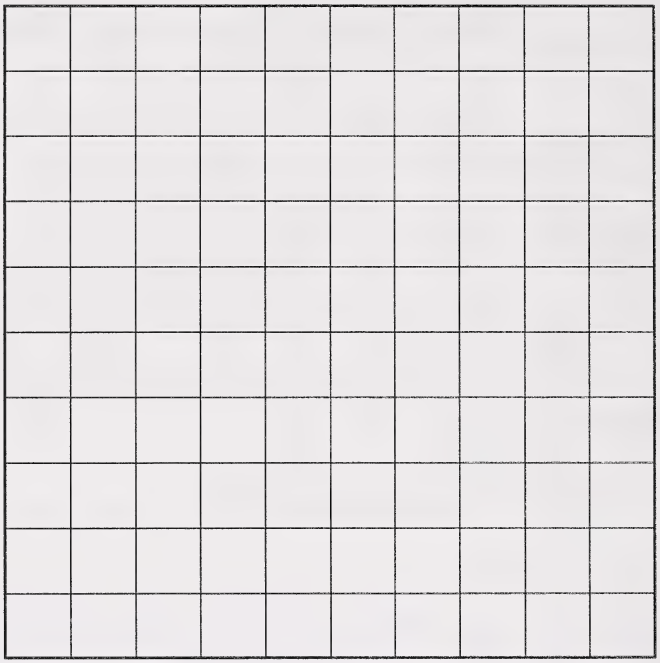
1. How many cubes can you place on a grid in 1 minute?

- Ask your home instructor to work with you. Take turns doing the activity and timing each other for 1 minute. Use the grids on the next page.
- Fill in one whole row before beginning the next row.
- Record the number of cubes each person put on the grid in 1 minute.

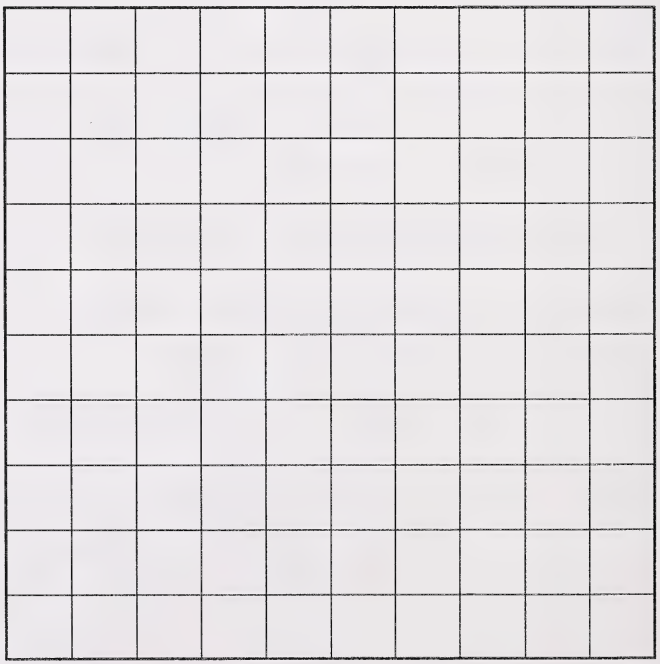
Task 1	
Me	_____
My Home Instructor	_____

- Use a crayon or felt marker to colour the number of grid squares that each person covered in 1 minute.

Me



My Home Instructor

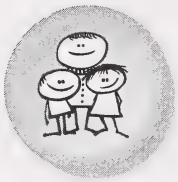


2

2. How many times can you write your name in 1 minute? Make one person the timekeeper while the other does the activity and then switch.

Me	My Home Instructor

Task 2	
Total: _____	Total: _____



(2)

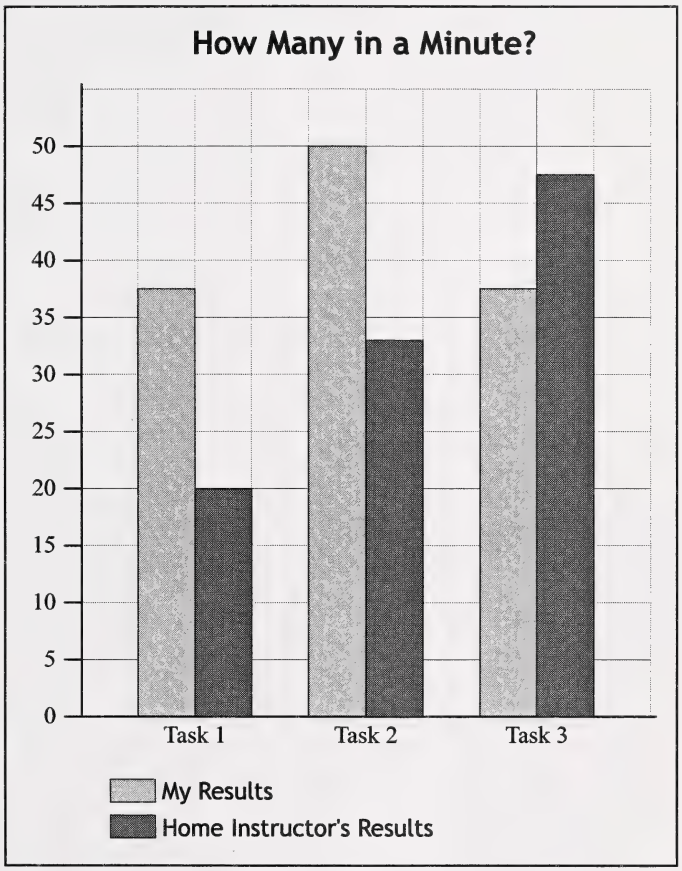
3. How many times can you write the number 100 in 1 minute? Take turns timing each other.

Me	My Home Instructor

Task 3	
Total: _____	Total: _____

(5) **4.** Use the data you recorded from the three activities to make a bar graph.

For this bar graph you will make two side-by-side bars for each activity—one bar for your data and one bar for your home instructor's data. Here is an example:

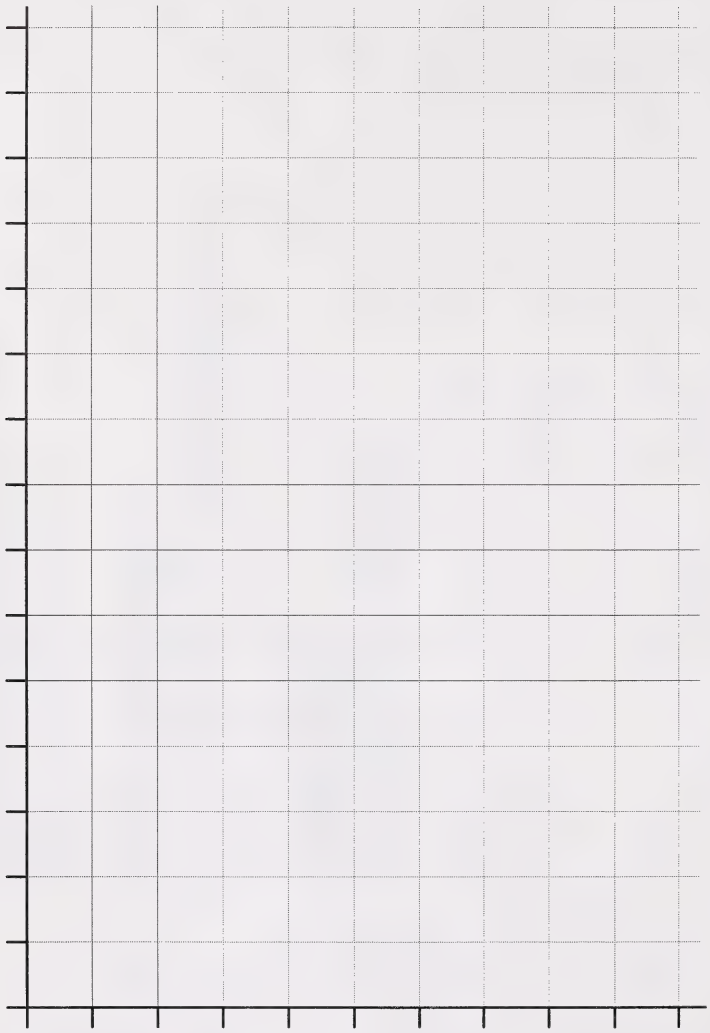


Use the graph form on the next page.

Before you begin, choose an interval to use along the vertical axis. Check the data from all three tasks so you know what the largest number is that you will be recording.

Remember to label each axis, to use two colours when you shade the bars, and to colour the boxes at the bottom to show which bars show your data and which bars show your home instructor's data.

How Many in a Minute?



My Results

Home Instructor's Results

5. Estimate how many times you think you could do each of the tasks

- in 5 minutes
- in 10 minutes

Use only the data you collected about yourself. (**Hint:** Before you begin, round your 1-minute totals to a number ending in 0.)

(5)

a. Task 1: Cubes on a Grid

Number of cubes you placed on the grid in...	1 minute	
How many cubes could you place on the grid in...	5 minutes?	Estimate
	10 minutes?	Estimate

Show how you calculated your estimates:

(5)

b. Task 2: Writing Your Name

Number of times you wrote your name in...	1 minute	
How many times could you write your name in...	5 minutes?	Estimate
	10 minutes?	Estimate

Show how you calculated your estimates:

(5)

c. Task 3: Writing the Number 100

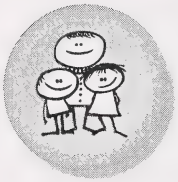
Number of times you wrote the number 100 in...	1 minute	
How many times could you write the number 100 in...	5 minutes?	Estimate
	10 minutes?	Estimate

Show how you calculated your estimates:

22

Day 14: Counting Objects

How Many Red Ones?



Note to the Home Instructor

For this activity, the student requires a package of small multi-coloured candies (for example, Smarties or M&M candies). Use the 50-g package.

If you prefer, you may wish to substitute a collection of coloured beads, buttons, bread tags, miniature marshmallows, or other small, coloured objects. If so, you may have to modify some of the questions to reflect the colours of the objects you are using.

In this activity, you are going to count the number of each colour of candy in a package. Answer the following questions before you open the package.

1. Do you think there will be the same number of each colour in the package? _____

2. Estimate how many candies you think there are in the package. Write your estimate here. _____

(5) **3. a.** Predict how many red ones you think you will find in the package. Write your estimate on the tally sheet in the **Prediction** column.

b. Empty the pack of candies onto a paper towel on a flat surface. Then separate the candies into groups of the same colour. On the tally sheet, record the number of each colour found.

Colour	Prediction	Tally
Red		

(5) **4.** Construct a **pictograph** to display your data. Draw circles to show the candies. Use felt markers or crayons to match the colour of each candy.

Put a title at the top. Use the box at the bottom to show how many candies each circle stands for.

Title: _____

Colour

(2) **5.** Give the difference between your estimate and

a. the actual number of candies found in your package _____

b. the actual number of **red** candies in your package _____

(3) **6.** Write **three** true statements about the colours of the candies based on the data in your graph (number of colours, colour with the most or least).

_____

_____

_____

_____

_____

(2) **7.** If you bought another package of the same candies, do you think you would find exactly the same number of each colour as was in the first package? Tell why or why not.

_____

_____

_____

_____

This is the end of the activity. Now, ask your home instructor if you can eat the candies!

8.

Journal Entry

(5)

If you were going to share some data or information with other people, would it be a good idea to use a graph to display your data? Tell why or why not. Also, explain when you would use a pictograph and when you would use a bar graph.

23

Day 15: Using Charts and Tables

How Tall Will I Be?

This activity is designed to give you practice reading and interpreting data displayed in a table or chart. Your job is to make sense of the data, add some of your own data, and then answer the questions that follow.

Note to the Home Instructor

The exercises in this activity allow the student to complete information about height expectations and answer questions about the heights of family members. The table shows average heights for ages two to adult.

Students may need assistance measuring their present height. Use a measuring tape (or masking tape marked off in centimetres and taped to the wall) to measure the heights of family members.

1. Complete each of the following statements. If you don't know an answer, and your home instructor is also unsure, you may leave the space blank.

a. My height at birth was _____ cm.

b. My height at age 6 was _____ cm. (Estimate if you don't know)

c. My age today is _____ years.

d. My height today is _____ cm.

e. I am _____ cm taller than I was at age 6.

Use the information in the table to answer the questions that follow.

AVERAGE HEIGHT FOR CHILDREN

Boys		Girls	
Age (in years)	Height (in cm)	Age (in years)	Height (in cm)
2	87	2	86
3	96	3	95
4	104	4	102
5	111	5	108
6	117	6	115
7	122	7	121
8	127	8	127
9	133	9	132
10	138	10	138
11	143	11	145
12	149	12	152
13	156	13	157
14	163	14	160
15	169	15	161
16	174	16	162
17	176	17	163
18	177	18	164

(2) **2.** Find your age in the correct column (either Boys or Girls).

a. What is the average height for someone your age? _____

b. Are you taller than, shorter than, or about the same height as the average person your age? _____

(2) **3.** Use the table to help you make predictions about your height in the future.

a. I predict that my height will be _____ cm when I am 14 years old.

b. I predict that my height will be _____ cm in 10 years.

(5) **4.** Ask your home instructor to help you measure the height of each number of your family (you, parents, brothers, and sisters). Record the data on the following chart.

Family Member	Age (in years)	Height (in cm)

(5) **5.** Make a bar graph comparing the heights of the members of your family. Put the names in order along the horizontal axis starting with the youngest. Don't forget to label the axes, colour and label the bars, and add a title. Use the graph form on the next page.

Title: _____

Use the table that shows the average height for children to answer the following questions.

(3) **6.** Would you say that most members of your family are **typical** in height? Do their heights match those on the chart, or are they taller or shorter than the average heights? Use the table to explain your answer. (**Note:** On the chart, the height for an adult is the same as the height for an 18-year-old person.)

(3) **7.** Ravi noted that he was 150 cm tall at age 10. Do you think he will be 300 cm tall at age 20? Explain your answer.

(3) **8.** Do you expect to be about average, taller than average, or shorter than average by age 20? Explain your answer.

47

Day 16: Putting It All Together

Part 1: Reviewing the Concepts

Use what you know about data management to complete the following exercises. Look back in the Student Module Booklet if you need to review any of the concepts you have studied. You are to complete **all** of the questions in Part 1.

Collecting Data

1. A Grade 4 class plans to hold an ice-cream sale in their school to raise money for a field trip. Rosa and Fred want to be sure the students will like the kinds of ice-cream their class sells. They decide to survey the students first.

(2) **a.** What question would you ask if you wanted to be sure you had the most popular flavours of ice cream for the sale?

(4) **b.** Explain how you would conduct the survey. How many people would you ask? How would you decide who to ask? (Fred and Rosa's school has 224 students in Grades K to 6.)

Constructing a Pictograph, a Bar Graph, and a Line Plot

(5)

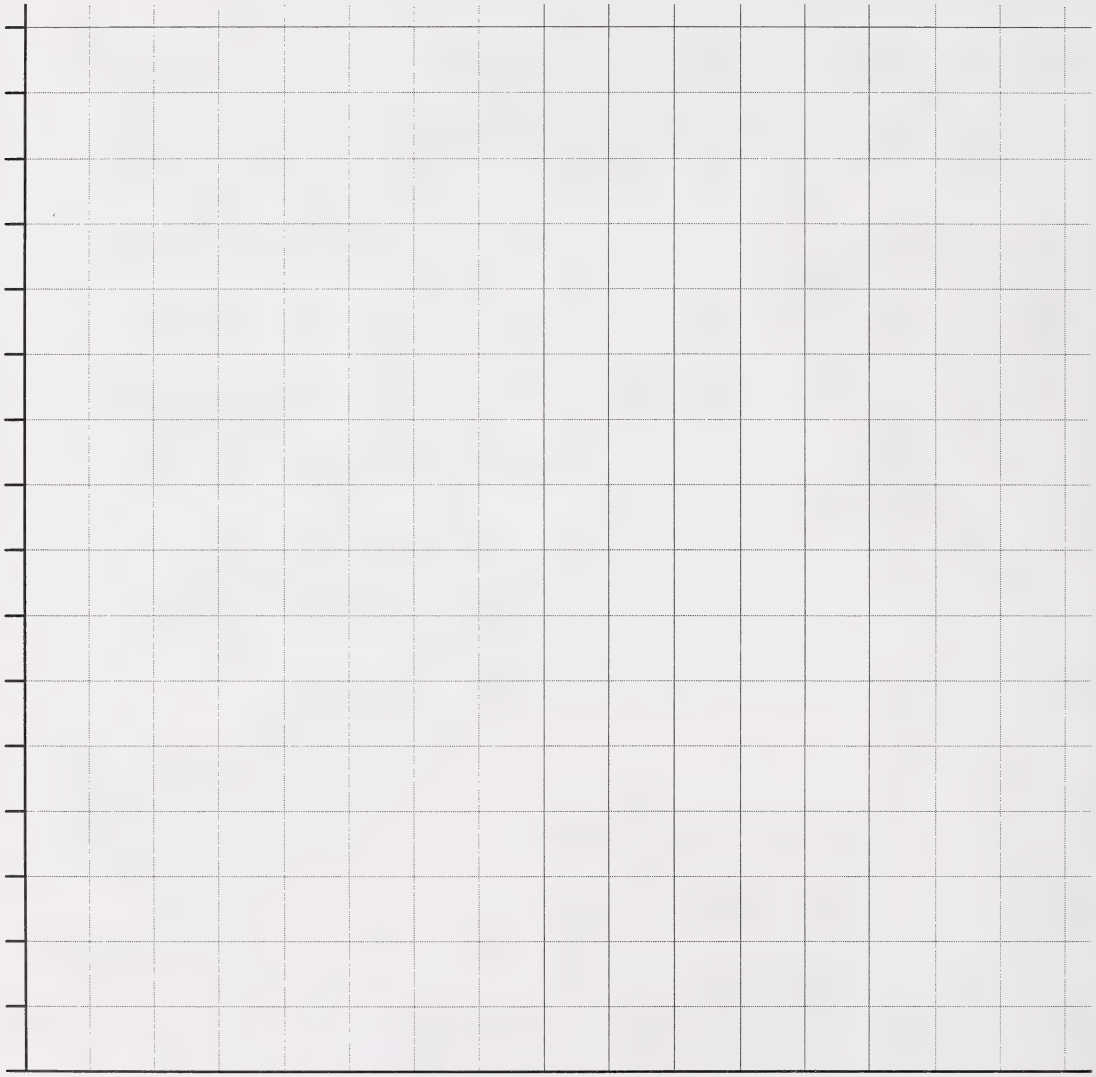
2. Turn to page 24 of your textbook. Do question 1 of Problem Bank. Answer the Question in the spaces provided.

a. Problem Bank, Question 1.a.

Title: _____

(5) **b. Problem Bank, Question 1.b.**

Title: _____



(3)

c. Problem Bank, Question 1.c.

Interpreting a Bar Graph

3. Turn to page 27 in your textbook. Do question 4 in Skill Bank.

(6)

Skill Bank, Question 4

Write your three statements here.

-
-
-

Interpreting a Pictograph

4. Look carefully at the data presented in the pictograph. Then answer the questions that follow.

Trees Planted in City Parks

Poplar	
Elm	
Birch	
Spruce	
Maple	
Green Ash	

Each ▲ represents 10 trees.

(2) **a.** What is this graph about?

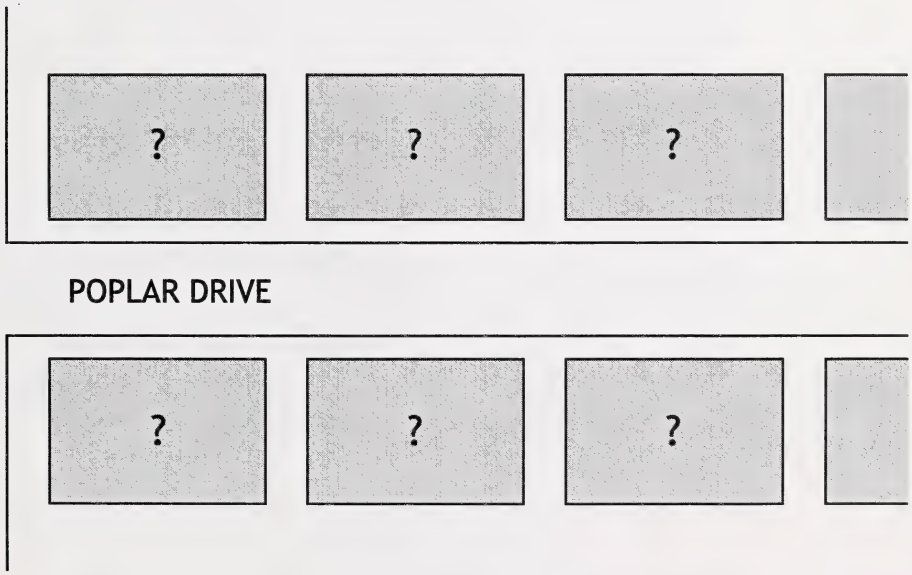
(3) **b.** How many elm trees were planted? _____ How do you know?

(2) **c.** How many more maple trees were planted than poplar trees?

Problem Solving

Use the Acting Out the Problem strategy or another strategy you know to solve the following problem. Draw a diagram or use the cut-out learning aids from the last page of this Assignment Booklet. Then write a sentence answer.

(5) **5.** Doug has six friends who all live on Poplar Drive. Larry, Heidi, Rose, Peter, Glen, and Brenda live across from each other in the first three houses on each side of the street.



- Larry lives in the first house directly across the street from Heidi.
- Rose lives next door to Larry.
- Peter lives next door to Heidi and on the same side of the street as Brenda.

Where does each of Doug's six friends live?

_____

_____

10

Part 2: Challenge Activities

Choose **either** Activity A **or** Activity B, **or** you may do both if you wish.

10

Activity A: Count the Letters!

For this activity you need a novel or a page from a newspaper. Open the novel to any page or select a news story from the newspaper page.

1. a. Tell where the page you are using comes from (e.g., a novel or a newspaper).

_____

b. Now guess the answer to the following question:

Which of the following letters is used most often?
a e t s r

I think the letter _____ will be used most often on the page (or in the news story).

(2) **2.** Using a tally sheet, record the number of times each letter appears on the page or in the story. Count your tallies and record the totals in the third column.

Letter	Tally	Total
a		
e		
t		
s		
r		

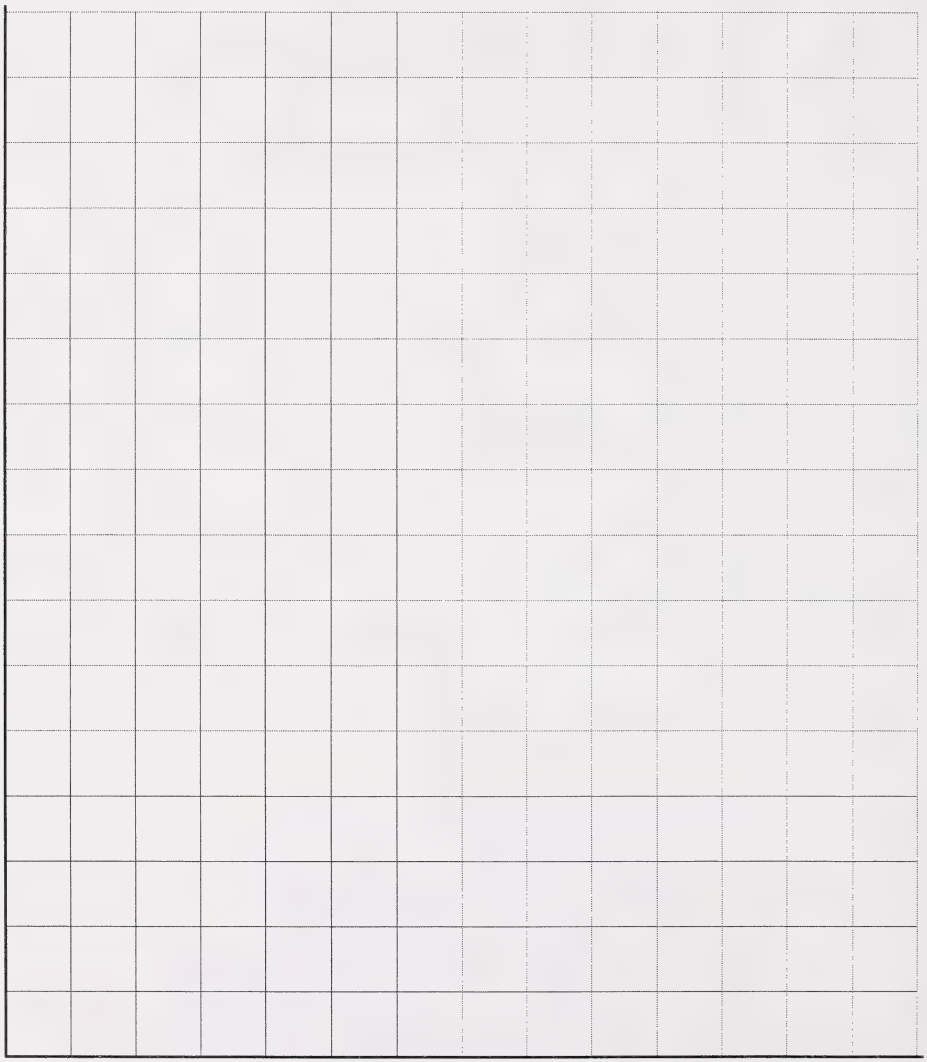
(2) **3.** Compare your results with your guess.

a. Which letter did you guess? _____

b. Which letter actually appeared the most times? _____

(6) **4.** Construct a bar graph to display your data. Be sure to label each axis, colour the bars, and give your graph a title.

If you use many-to-one correspondence, you will have to choose an interval for the vertical axis.



(10)

Activity B: Food for the Food Bank

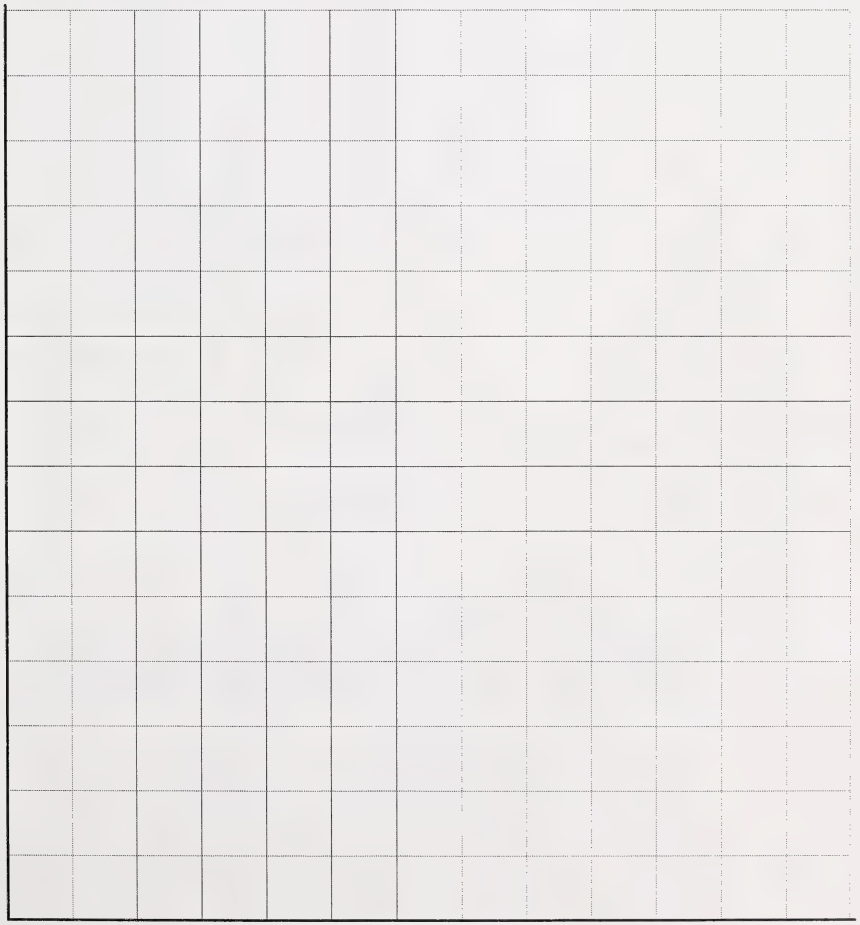
The members of a Boy Scout troop were divided into four teams. They went door-to-door asking for donations of food for the local food bank. The table shows their results after 1 hour.

Team	Number of Food Items
1	35
2	40
3	55
4	50

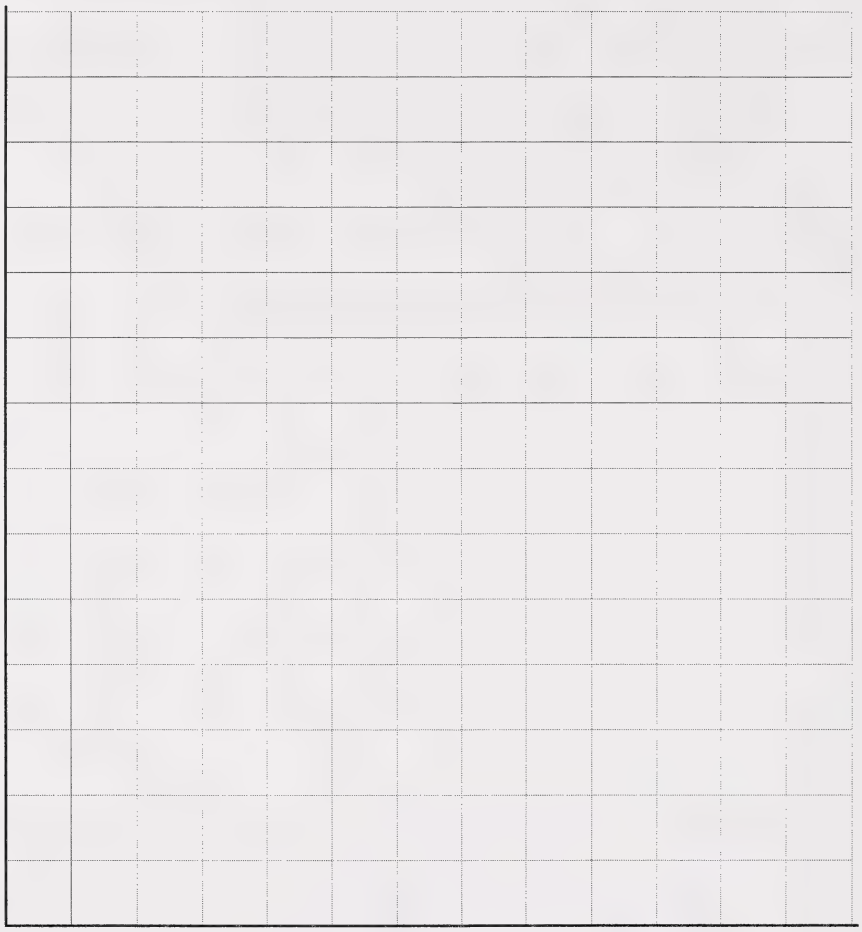
1. Construct **two** bar graphs to display the data.

(3)

a. Use an interval of 10 on the vertical axis.



(3) **b.** Use an interval of 5 on the vertical axis.



(2) **2. a.** Compare the two bar graphs you drew. Explain how changing the interval changes the height of the bars in the graph.

_____

_____

_____

_____

_____

(2) **b.** Suppose that you used an interval of 2 along the vertical axis. Do you think the height of the bars would be bigger or smaller than the bars in the first two graphs? Explain your answer.

Day 17: Assessing What You Know (I)

Home Instructor's Assessment Page for Day 17

Directions for the Home Instructor

Remove this sheet from the Assignment Booklet. Use the Checklist and Comments sections to help evaluate the student's work. When the Day 17 activities have been completed, firmly attach this sheet to Assignment Booklet 1B.

Student's Name _____

Home Instructor _____ Date _____

Indicate in the Checklist and Comments sections what you observe and hear as the student works through the assessment task. Encourage the student to "think out loud" as he or she works. As you observe, you may wish to use questions or prompts like the following to help in determining the student's level of understanding.

- What do you have to do first to make a pictograph?
- What information helps you decide what to do?
- How did you get those totals on the tally sheet?
- What symbol (picture) are you going to draw?
- How do you know how many symbols to draw for each line?
- How many objects does each symbol stand for?
- What information does this pictograph tell you?
- What else can you tell me about your pictograph?

Checklist

A. The student shows a clear understanding of how to make a pictograph.	☐ Yes	☐ Not yet
B. The student uses a symbol to represent more than one item and can explain what the symbol stands for.	☐ Yes	☐ Not yet
C. The student is able to accurately interpret and discuss the data he or she has displayed on the pictograph.	☐ Yes	☐ Not yet
D. The student can draw some conclusions based on the pictograph (that is, can state what must be true).	☐ Yes	☐ Not yet

Comments

Add any comments you have regarding the student's performance on the assessment task or any other information about the student's learning experiences in this module that you would like to share with the teacher.

(20)

Day 17: Assessing What You Know (II)

Student's Assessment Page for Day 17

Student's Name _____

(10)

Part 1: Showing What You Can Do

(2)

1. Constructing a Pictograph

Sara and Raj conducted a survey to see which animals were the favourite pets in two Grade 4 classes. They recorded their results on a tally sheet. Fill in the totals at the bottom of the tally sheet.

	Dog	Cat	Fish	Bird	Hamster
	𝍸 𝍸 𝍸 III	𝍸 𝍸 III	IIII	𝍸 IIII	𝍸 I
Totals					

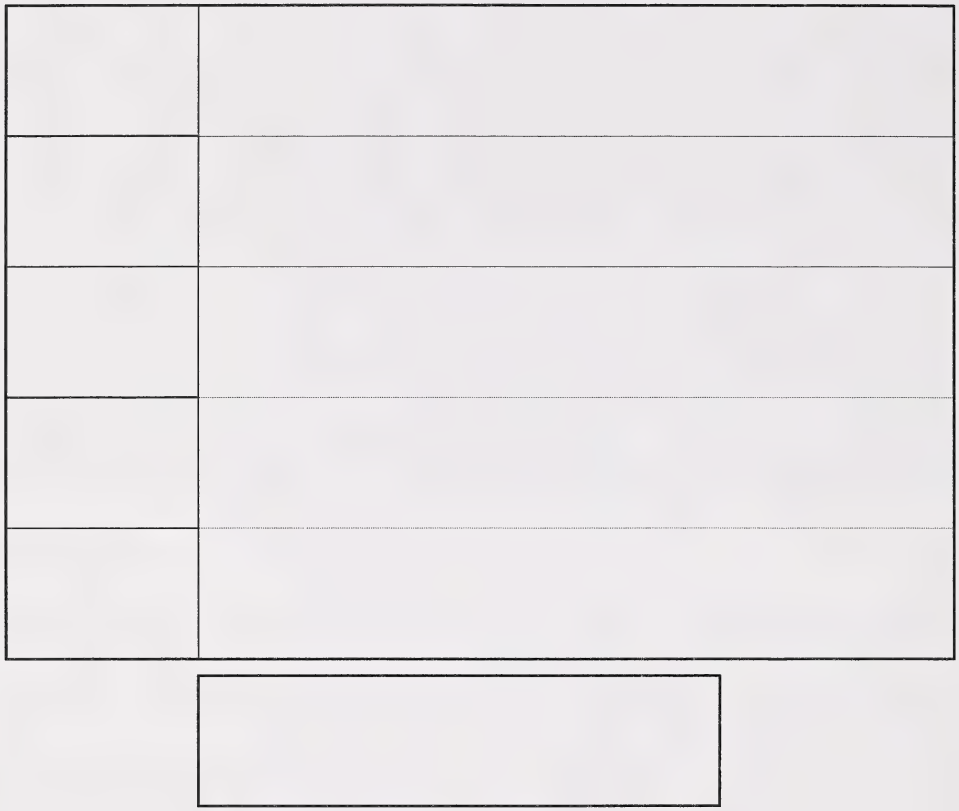
(5)

2. Construct a pictograph using the data from the tally sheet.

- Use **many-to-one correspondence**.
- Let the symbol you use stand for more than one animal.
- Label and colour your graph.
- Give your graph a title.
- Show the meaning of your symbol in the box at the bottom.

Use this graph form for your pictograph in question 2.

Title: _____



(3) **3.** Tell your home instructor **three** things that are true based on the data shown in the pictograph. The write a sentence about each of the three things.

- _____
  _____
- _____
  _____
- _____
  _____

(10)

Part 2: Basic Number Facts

This section is made up of two timed tests. Ask your home instructor to time you as you do each test. Wait for your home instructor to tell you when to begin. **Do not mark these tests. They will be marked by your teacher.**

(5)

1. Addition Number Facts
Timed Test: 2 minutes

6 + 8 =	7 + 6 =	9 + 4 =	9 + 9 =	5 + 8 =
7 + 9	9 + 6	6 + 6	7 + 5	4 + 8
9 + 8 =	5 + 7 =	8 + 6 =	6 + 7 =	7 + 8 =
8 + 8	5 + 9	9 + 3	8 + 7	6 + 9
9 + 5 =	7 + 7 =	8 + 9 =	9 + 7 =	8 + 5 =

If you finish before the two minutes are up, check your answers. Wait for your home instructor to tell you when to begin the next test.

(5) **2. Subtraction Number Facts**
Timed Test: 2 minutes

15 – 6 =	12 – 5 =	14 – 9 =	16 – 8 =	15 – 9 =
13 − 4	14 − 5	16 − 7	12 − 9	15 − 8
18 – 9 =	13 – 7 =	17 – 8 =	14 – 8 =	16 – 9 =
13 − 8	15 − 7	14 − 7	12 − 8	13 − 9
13 – 5 =	14 – 6 =	17 – 9 =	12 – 7 =	13 – 6 =

If you finish before the two minutes are up, check your answers.

Part 3: Thinking About What You Know

Part 3 is a chance for you to assess your own knowledge and abilities in mathematics. Take a few minutes before you begin writing to look back through Days 1 to 15 in your Student Module Booklet. On what days did you learn new things that you didn't know before? Was there anything you found difficult or hard to understand? What things did you enjoy? What things would you like to know more about?

Now, using complete sentences, finish the following paragraph starters. You may wish to talk over your ideas with your home instructor before you being writing.

1. I think Module 1: Data Management is mainly about

_____

_____

_____

_____

2. Some things I learned in this module are

_____

_____

_____

_____

_____

_____

_____

_____

_____

3. One thing I liked about Module 1: Data Management is

4. Something I don't really understand is

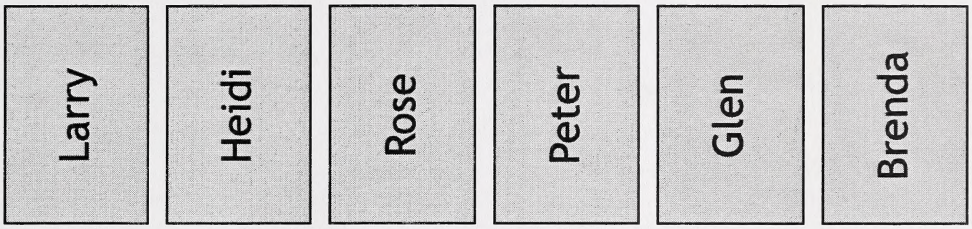
5. Something I would like to learn more about is

6. Something else I'd like to say is

Cut-Out Learning Aids

Day 16 Assignment Activities

Question 5



Mathematics 4
Assignment Booklet 1B
Module 1

LRDC

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